



BSI Standards Publication

Solid recovered fuels — Determination of bulk density

National foreword

This British Standard is the UK implementation of EN ISO 18708:2025. It is identical to ISO 18708:2025. It supersedes [DD CEN/TS 15401:2010](#), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/17, Solid biofuels.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 24449 6

ICS 75.160.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2025.

Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Solid recovered fuels - Determination of bulk density (ISO 18708:2025)

Combustibles solides de récupération - Détermination de la masse volumique apparente (ISO 18708:2025)

Feste Sekundärbrennstoffe - Bestimmung der Schüttdichte (ISO 18708:2025)

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 18708:2025) has been prepared by Technical Committee ISO/TC 300 "Solid recovered materials, including solid recovered fuels" in collaboration with Technical Committee CEN/TC 343 "Solid recovered materials, including solid recovered fuels" the secretariat of which is held by SFS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 15401:2010.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 18708:2025 has been approved by CEN as EN ISO 18708:2025 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 300, *Solid recovered materials, including solid recovered fuels*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 343, *Solid recovered materials, including solid recovered fuels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Introduction

Bulk density is one of the main quality parameters of solid recovered fuels (SRF). It is needed e.g. in a sampling process (volume of sampling tools, volume primary sample), in assessing transport capacity or storage space required or energy density (MWh/m³) of SRF. Bulk density is not an absolute value, therefore conditions for its determination are standardised in order to gain comparative measuring results.

This document describes the testing method for determining the bulk density of SRFs to produce solidified fuels from the combustibles in waste by processing, such as compressing, drying, crushing, moulding and solidifying, and utilize them as an energy source.

Solid recovered fuels — Determination of bulk density

1 Scope

This document specifies a method for determining the bulk density of solid recovered fuels (SRF) by the use of a standard measuring container. This method is applicable to all SRFs with a nominal top size of particle less than 1/3 of the container diameter specified in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21637, *Solid recovered fuels — Vocabulary*

ISO 21645, *Solid recovered fuels — Methods for sampling*

ISO 21646, *Solid recovered fuels — Sample preparation*

ISO 21660-3, *Solid recovered fuels — Determination of moisture content using the oven dry method — Part 3: Moisture in general analysis sample*

EN 15415-1, *Solid recovered fuels — Determination of particle size distribution - Screen method for small dimension particles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21637 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

bulk density

ρ

mass of a portion (i.e. a large quantity of particulate material) of a solid fuel divided by the volume of the container which is filled by that portion under specific conditions

[SOURCE: ISO 16559:2022, 3.40, modified — ρ added as the symbol for bulk density and definition revised adding reference to "solid fuel".]

4 Principle

A standard container is filled with the test portion of a given size and shape, densified by specified shock exposure and weighed afterwards. The bulk density is calculated from the net weight per standard volume and reported with the determined moisture content.

5 Apparatus

5.1 Measurement containers

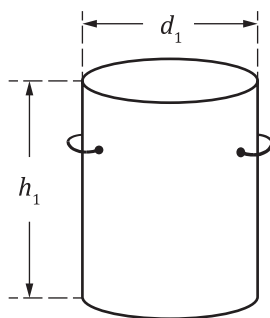
5.1.1 General

The container shall be cylindrically shaped and manufactured of a shock resistant, smooth-surfaced material. The container shall be resistant to deformation in order to prevent any variation in shape and volume. The container shall be waterproof. For easier handling, grips can be fixed externally.

The height-to-diameter ratio shall be in the range from 1,25 to 1,50. The determination of the particle size shall be performed in accordance with EN 15415-1.

5.1.2 Large container

The large measuring container (see [Figure 1](#)) has a filling volume of 50 l (0,05 m³). The volume can deviate by 1 l (= 2 %). It shall have an effective (inner) diameter of 360 mm and an effective (inner) height of 491 mm (see [Figure 1](#)). Deviations from these dimensions are tolerable, if the height-to-diameter ratio remains as given in [5.1.1](#).



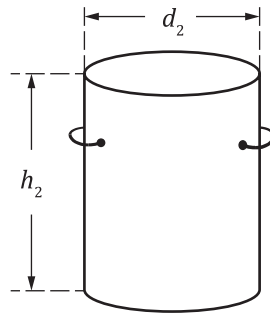
Key

d_1	inner diameter 360 mm
h_1	inner height 491 mm

Figure 1 — Large standardized measuring container

5.1.3 Medium container

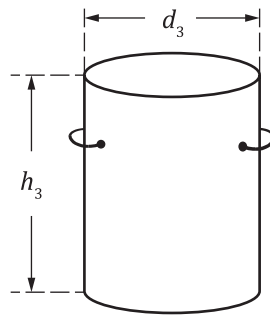
The medium measuring container (see [Figure 2](#)) has a filling volume of 20 l (0,02 m³). The volume can deviate by 0,4 l (= 2 %). It shall have an effective (inner) diameter of 265 mm and an effective (inner) height of 362 mm (see [Figure 2](#)). Deviations from these dimensions are tolerable, if the height-to-diameter ratio remains as given in [5.1.1](#).

**Key**

d_2	inner diameter 265 mm
h_2	inner height 362 mm

Figure 2 — Medium standardized measuring container**5.1.4 Small container**

The small measuring container (see [Figure 3](#)) has a filling volume of 5 l (0,005 m³). The volume can deviate by 0,1 l (= 2 %). It shall have an effective (inner) diameter of 167 mm and an effective (inner) height of 228 mm (see [Figure 3](#)). Deviations from these dimensions are tolerable, if the height-to-diameter ratio remains as given in [5.1.1](#).

**Key**

d_3	inner diameter 167 mm
h_3	inner height 228 mm

Figure 3 — Small standardized measuring container**5.2 Scale/Balances****5.2.1 Scale/Balance 1**

Capable of weighing the sample and the large container or medium container to the nearest 10 g.

5.2.2 Scale/Balance 2

Capable of weighing the sample and the small container to the nearest 1 g.

5.3 Scantling

A rigid scantling with a length exceeding the diameter of the measuring container in [5.1](#) shall be used for levelling the material in the container by lateral movements of the scantling across the rim of the measuring container.